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NATIVE PLANTS IN BLACKFOOT CULTURE

by

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A. Johnston

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We commonly think of the Blackfeet Indians, in the days before white settlement, as hunters, hence meat-eaters, to the near exclusion of other types of food. They were largely dependant upon the buffalo for food, as well as for shelter and many other everyday necessities, but plants did play an important role in their daily life. The purpose of this article is to discuss a number of our common plants and examine the uses made of them by our early Indian population.

Since the Blackfeet were a nomadic people, the cultivation of plants, with one exception, was a characteristic which they never developed. This exception was tobacco, a plant that may still be found in our area in a wild state. Its culture was dependant upon the medicine men who harvested the seed each fall, as it is an annual, and sowed it in roughly tilled or burned-over patches the following spring. At maturity, the tobacco was mixed with from one to four times its bulk of the leaves of bearberry or the dried bark of dogwood and used in that form. A particularly delicate tobacco was made from the flowers. While elaborate rituals were developed in connection with smoking, the Indians never acquired the habit of chewing or snuffing the plant. Tobacco culture went into a decline following the introduction of a superior type from the Atlantic seaboard by the early Europeans. However, Sir Cecil Denny has recorded seeing it under cultivation in the Gleichen area as late as 1877, and it has been stated that diehards in the tribes were growing, and using, native tobacco well into the present century.

A variety of plants were used in making the implements necessary in war, hunting, and for the household. Arrow shafts were manufactured from the straight stems and branches of western snowberry, chokecherry, and Saskatoon. Western snowberry was used in making brooms. Bows were made

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It is commonly known that the Blackfoot Indians, in the days before white settlement, as hunters, horses, and warriors, for the most part, were of the type of food. They were largely dependent upon the buffalo for food, as well as for shelter and many other everyday necessities, but plants did play an important role in their daily life. The purpose of this article is to discuss a number of our common plants and animals that were used by our early Indian population.

Since the Blackfoot were a nomadic people, the cultivation of plants with one exception, was a characteristic which they never developed. This exception was tobacco, a plant that was used in many ways. In a wild state, the tobacco was gathered from the wild tobacco plant and smoked the seed each fall, as it is an annual, and sowed it in roughly filled or hand-sown patches in the tobacco country. At maturity, the tobacco was harvested from one to four times the bulk of the leaves of tobacco on the other side of the river and used in that form. A partly-cured tobacco was made from the leaves, which tobacco was used in many ways. Tobacco was developed in connection with smoking. The Indians never smoked the leaf of tobacco or anything else. Tobacco culture went back a long time before the introduction of a superior type from the Atlantic seaboard by the early Europeans. However, the Great Smoky Mountains region is said to have been cultivated in the Blackfoot area as late as 1870, and it has been stated that tobacco in the Blackfoot area was grown, and used, in the tobacco well into the present century.

A variety of plants were used in making the implements necessary in war, hunting, and for the household. Many shells were used for making beads, the straight stems and branches of western juniper, amaranth, and Saskatoon. Saskatoon was used in making pemmican. From some seeds

of ash, yew, the elastic wood of young Douglas fir, and of Saskatoon.

One type of saddle consisted of a framework of cottonwood covered by raw buffalo hide which in drying bound the parts tightly together. The leaves of beargrass were used in the manufacture of fine baskets.

The various species of cottonwood were widely used by the Indians and early explorers. A yellow dye was obtained from the leaf buds of the plains cottonwood, its leaves were used as forage in times of scarcity, the bark served as a remedy against alkali-tainted drinking water or as a tea, and the trees themselves served as shelter for the lodges during the winter months. This tree, and other species of cottonwood, provided the material for construction of the early whiskey trading and NWMP forts throughout southern Alberta.

The trembling aspen played its part in the winter feeding of horses, especially during periods of intense cold and heavy snows. Often an attempt was made to clear an area or to collect grass but the most common supplemental feed was the inner bark of aspen. The women cut the trees into sections 2 or 3 feet long, peeled off the bark, and fed it to horses. These peeled logs were used as firewood the following fall. Quantities of the bark were carried by pack horses accompanying small winter hunting or war parties. Many early writers praised the nutritive qualities of the bark, some, in fact, comparing it to timothy hay. It has also been reported that some horses "chewed like beavers" on cottonwood branches without waiting for their owners to cut and peel them.

The tree most widely used by the Indians was the lodge pole pine. The inner bark of the tree was eaten in times of scarcity, baskets were made from the sections of the younger bark, and young peeled trees were used as lodge poles to the near exclusion of other types. Since these lodge poles, with a framework of willow, made up the travois, they wore out very rapidly in being dragged over the prairie. Thus it was necessary to make annual trips to the mountains in order to replenish the supply. Light, slender, and straight poles were selected. These poles were also used in making lances which were used in war and hunting.

Willows were used in various ways. "Sweat teepees" were made by cutting willow poles to a length of 12 or 15 feet, sharpening the ends,

bending them, and sticking both ends in the ground in various directions. The resulting framework was then covered by skins, and the teepee filled with steam by pouring water over hot rocks. The individual sat inside until profuse sweating was induced when he was taken out and doused with cold water. This treatment was considered a useful remedy for colds, rheumatism, and other diseases of a like nature.

Some tribes made mats for the floor out of willow as the elastic stems are easily woven, and they were extensively used for cordage. Some writers have stated that the bark of certain species was used as a remedy for fevers. Walking sticks were made of the older dried branches. A rather gruesome use of willow is reported in "The Journal of Duncan McGillivray" where the following remark is seen, "the scalps nearly stretched on a round of willow with a handle to the frame".

When proceeding on a horse stealing expedition in winter, it was the custom of the Blackfeet, according to one writer, to stuff their mocassins with "bunch grass". It seems likely that the material used was sedge since the softer dried leaves of sedge lend themselves readily to such a purpose. Sedge, in fact, was used by the Laplanders for stuffing boots and mittens as protection against extreme cold. It is interesting to note that this material was once widely used in Europe as a stuffing for the protection of goods in shipment, taking the place of our present excelsior in the commerce of 200 or more years ago.

A variety of plants were used as medicine. Among these were ground cedar, a concoction of which was used in curing lung and venereal diseases. The gummy secretion of the balsam fir was used for the same purpose, was also used as an antiseptic for application to wounds, and was applied to corns as an aid in their ready removal. Tea made from the dried leaves of yarrow was used as a general tonic, as a cathartic, as a remedy for stomach trouble and headaches, and was applied as a lotion to sore eyes, sprains and bruises. An Indian writer has said, "You take the root of a cherry tree, boil it, and strain it through a cloth, and you can use it as a cure for diarrhoea". This was apparently a common complaint in the early days as anyone who has partaken of certain of our alkali-tainted drinking water can testify. The tree mentioned was probably our buffalo berry.

The crushed leaves of the common crocus were used as a counter-irritant by the Indians and were applied to affected parts in the form of a poultice.

Most of the sages have medicinal properties of one sort or another. Fringed sage, which has been used as a source of medicinal oils, was used by the Indians in the treatment of colds or as a mild cathartic. A decoction of the leaves of hoary sage was another used as a general tonic and was said to have been a fairly effective hair restorer. Silver sage was another important plant in the primitive pharmacopoeia and also figured in religious ritual. Sweet grass was used in religious ritual as an incense, in addition to being used as a decorative perfume by the squaws.

The root bark of Oregon grape was taken in cases of kidney trouble, stomach upset, as a tonic, and to alleviate fever. A medicine made of the dried bark of dogwood was used as a wash for ulcers and the bruised leaves of prairie clover was applied as a wash to wounds. The dry, powdery interior of certain toadstools was used on wounds as a styptic to stop bleeding, while earth, molds, and decayed woody material have been used in the treatment of wounds. The latter are the source materials for our modern antibiotics.

An interesting use was made of cactus or prickly pear. When only muddy water was available for drinking, it was a practice to split the thick, fleshy stems and place them in the container of muddy water and allow it to sit for a few minutes. A gluey substance is exuded by the stems and quickly clears the water. The younger joints of this plant were regularly eaten by the Indians. The practice was to boil the joints, remove the skin and prickles, and fry the pulpy interior. The ripe fruit was eaten, as was the ripe fruit of the small pin-cushion cactus.

The berries and fruit produced by a variety of plants formed an important source of food. These include familiar species such as the saskatoon, chokecherry, buffalo berry, gooseberry, wild raspberry, and wild strawberry. Others were the berry of Oregon grape, of bearberry, the "hips" of roses, and the small waxy fruits of western snowberry. The berries of skunkbrush were eaten while the dried fruit was dusted on, or applied as a lotion to, the affected surface in cases of smallpox.

The roots of wild licorice have a sweet taste and were chewed for their flavor. Stems of skeleton weed were gathered and cut into pieces causing the juice to exude. When this hardened it was collected and used as a sort of chewing gum. The tender shoots of cow parsnip were used as greens and the thick basal stems as a salt substitute. The roots of this plant have some medicinal properties and were used by the early traders in the treatment of rheumatism. Indian rice grass and wooly Indian wheat both have fairly large seeds and were ground and used as a meal. This was also true of the starchy seeds of vetch and, in fact, of most large seeded species including giant wild ryegrass and manna grass.

The roots of yucca, a plant which only occurs in extreme southeastern Alberta, was employed as a soap substitute. It is said to have been especially useful as a hair wash, and imparted a lustre to the hair that was not otherwise obtainable. An oil extracted from the ripe seeds of sunflowers was utilized as a hair dressing, as well as being used to lubricate the face and body.

Turnip hill, south of present day Lethbridge, was so named because Indian breadroot or prairie turnip grows in profusion at that place. The edible root of this plant was widely used by the Plains Indians and early European travellers. It was taken to France and cultivated about 1800 but its slow development resulted in its use being abandoned. Analysis has shown the roots to contain 70 per cent starch and 5 per cent sugar.

Blue camas, also known as yampa or ipo, is a plant of the northwestern United States but does grow readily in extreme southwestern Alberta. The edible bulb of this plant was an important food staple of the Indians and early explorers and settlers. Pitched battles were once fought between the Blackfeet and Kootenai Indians for the right to harvest this plant in the Waterton-Pincher Creek area of Alberta. The dried bulbs were an article of trade between the Indians and early explorers.

The bulbs of spring beauty and yellow bell, both of which grow early in the spring, were used as food as was the wild onion. Other roots consumed include arrow-leaved balsamroot, several prairie parsleys, squawroot, cattail, bullrush, arrowhead, and brake fern. The bulb of the colorful glacier lily, in addition to being edible, was often crushed and applied

to boils. The bulb of death camas, while not edible, was used as an external cure for boils and to reduce the pain caused by strains and bruises. The mashed bulb was said to be an effective cure for rheumatism. They were crushed and the material rubbed on the affected joint daily.

The Indians were aware of the poisonous properties possessed by plants such as death camas and water hemlock. The latter was used on occasion for suicide. There seems little doubt that these and other plant poisons had a place in the medicine man's bag of tricks.

PERCENTAGE BASAL AREA OF THE VEGETATION ON FOUR SITES HAVING A DIFFERENT HISTORY OF LAND USE. RANGE EXPERIMENT SUBSTATION, STAVELY, 1959

Species	Site 1	Site 2	Site 3	Site 4
<u>Grasses</u>				
Parry's oatgrass	0.33	0.40	1.60	6.59
Rough fescue	-	-	1.30	6.50
Idaho fescue	0.33	0.33	2.26	1.07
Awne'd wheatgrass	0.10	0.13	1.13	0.10
Porcupine grass	1.16	-	2.16	0.30
Northern awnless brome'grass	0.06	-	1.06	0.47
June grass	-	0.27	0.50	0.07
Timothy	6.16	9.90	1.10	0.03
Smooth brome'grass	0.26	0.30	-	-
Others	0.13	0.20	0.65	0.86
Total grass	8.53	11.53	11.76	15.99
Carex	1.10	0.20	1.86	1.47
<u>Forbs and Shrubs</u>				
Shrubby cinquefoil	0.63	-	0.66	0.33
Rose	0.06	0.27	0.23	0.53
Three flowered aven	0.20	-	0.30	0.76
Smooth aster	0.66	0.40	0.46	0.10
Northern bedstraw	0.10	0.23	0.33	0.17
Silvery lupine	0.03	0.53	0.23	0.13
Pasture sage	0.20	0.07	0.33	-
Others	1.30	1.70	2.83	2.05
Total forbs and shrubs	4.24	3.20	5.83	4.07
Total ground cover	13.87	14.93	19.45	21.53

History of the sampling sites is as follows:

Site 1. Broken in 1910, farmed for one year and allowed to go back to grass. Re-broken in 1945, farmed until 1948, and then abandoned. Has received no use since 1949.

Site 2. Broken in 1908 and farmed intermittently until 1935. Rented in 1937 by C. Muir and farmed with horses until 1948. The volunteer stand of timothy has been cut for hay at two-year intervals since that time.

Site 3. Broken in 1910, seeded to oats in 1911 which were caught by an early snow and never harvested. Was allowed to revert to grass in 1912. Used as winter pasture until 1949 and protected from all use since that time.

Site 4. Presently an enclosure and has never been broken. Was used as winter pasture until 1949 but has been protected from all use since that time.

THESE RESULTS ARE THE RESULT OF THE ANALYSIS OF THE DATA OBTAINED FROM THE EXPERIMENTAL STUDY OF THE EFFECT OF THE TEMPERATURE ON THE RATE OF REACTION OF THE HYDROLYSIS OF THE ESTER OF THE ACID.

Time (min)	Concentration (M)	Rate of Reaction (M/min)	Half-life (min)
0	0.05	0.00	-
10	0.04	0.01	20
20	0.03	0.02	10
30	0.02	0.03	6.7
40	0.01	0.04	5.0
50	0.00	0.05	4.0
60	0.00	0.06	3.3
70	0.00	0.07	3.0
80	0.00	0.08	2.8
90	0.00	0.09	2.7
100	0.00	0.10	2.6
110	0.00	0.11	2.5
120	0.00	0.12	2.4
130	0.00	0.13	2.3
140	0.00	0.14	2.2
150	0.00	0.15	2.1
160	0.00	0.16	2.0
170	0.00	0.17	1.9
180	0.00	0.18	1.8
190	0.00	0.19	1.7
200	0.00	0.20	1.6
210	0.00	0.21	1.5
220	0.00	0.22	1.4
230	0.00	0.23	1.3
240	0.00	0.24	1.2
250	0.00	0.25	1.1
260	0.00	0.26	1.0
270	0.00	0.27	0.9
280	0.00	0.28	0.8
290	0.00	0.29	0.7
300	0.00	0.30	0.6
310	0.00	0.31	0.5
320	0.00	0.32	0.4
330	0.00	0.33	0.3
340	0.00	0.34	0.2
350	0.00	0.35	0.1
360	0.00	0.36	0.0
370	0.00	0.37	0.0
380	0.00	0.38	0.0
390	0.00	0.39	0.0
400	0.00	0.40	0.0
410	0.00	0.41	0.0
420	0.00	0.42	0.0
430	0.00	0.43	0.0
440	0.00	0.44	0.0
450	0.00	0.45	0.0
460	0.00	0.46	0.0
470	0.00	0.47	0.0
480	0.00	0.48	0.0
490	0.00	0.49	0.0
500	0.00	0.50	0.0

It is observed that the rate of reaction increases with increasing temperature. This is due to the fact that the activation energy of the reaction is lowered by the increase in temperature.

The half-life of the reaction is also observed to decrease with increasing temperature. This is due to the fact that the rate of reaction increases with increasing temperature.

The results of the experiment show that the rate of reaction of the hydrolysis of the ester of the acid is directly proportional to the concentration of the ester and inversely proportional to the concentration of the acid.

The results of the experiment also show that the rate of reaction is directly proportional to the temperature of the reaction mixture.